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ज्ञानेन प्रकाशते जगत्
INDUS UNIVERSITY
Constituent Institutes of Indus University

Semester:	IV	Branch:	CE/CS/IT
	End Semester Examination (MAY 2022)		
Subject Code:	CE0417	Subject Name:	Data Structure & Algorithms
Date:	11/5/2022	Time:	10:00am To 11:30am
Day:	Wednesday	Total Marks:	40

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 Define Data Structure. Explain Primitive and Non-Primitive data structure in detail. 04

Q.2 Design an algorithm/ pseudocode for Bubble sort. Illustrate the working of bubble sort on the following array: 54,26,93,17,77,31,44,55,20 06

OR

What is Queue? Write insert and delete algorithm in simple queue. 06

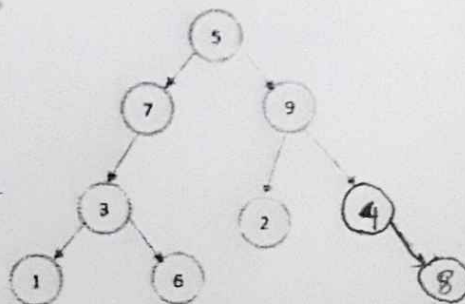Q.3 Explain PUSH and POP Stack operations in detail. 04

Q.4   a) Define Linked list. Compare Linked list with array. 04

      b) Compare singly, doubly and circular linked list. 02

OR

Define Graph data structure. Explain Depth First Search(DFS) Traversal with example. 06

Q.5 Write down the Inorder, Preorder and Postorder traversal of the following binary tree 04

Q.6   What is a Binary Search Tree (BST)? Show the structure of the binary search   06
tree after adding each of the following values in that order: 10, 25, 2, 4, 7, 13,
11, 22. What is the height of the created binary search tree?

<div align="center">OR</div>

Q.6   Given the values {2341, 4234, 2839, 430, 22, 397, 3920} a hash table of size 7 and a hash   06
function $h(x) = x \bmod 7$, show the resulting table after inserting the values in the given
order with each of the following collision strategies.

(i) separate chaining

(ii) linear probing

Q.7   Explain Sequential file organizations and list its advantages and disadvantages.   04

Q.8   Define collision in hashing? Discuss any two collision resolution techniques.   06

<div align="center">OR</div>

Compare Linear search and Binary search. Write a C program to perform searching   06
operations using binary search.

<div align="center">***All the Best***</div>